

**REMARKS**

Claims 1-19 are pending in the above-captioned application. Claims 1, 8, 10, 12 and 13 have been amended herein in order to more clearly define and fully protect Applicant's invention. Allowance of all claims 1-19 is believed appropriate and is respectfully requested.

**Objection to the Specification**

Paragraph [0001] of the specification stands objected to, in that it contains a section not specifically called for by the Manual of Patent Examining Procedures (MPEP). While Applicants respectfully assert that the MPEP is not binding authority and that neither the MPEP nor the Rules are exclusive (that is, neither expressly prohibits sections in addition to those specifically enumerated), Applicants have deleted paragraph [0001] herein, in order to expedite prosecution on the merits. Accordingly, withdrawal of the objection to the specifically is appropriate and is requested.

**Rejection Under 35 U.S.C. §112**

The Office Action rejects claims 10, 12 and 13-19 under 35 U.S.C. §112, it being asserted that there is insufficient antecedent basis for the expression "the layers" in claim 10; insufficient antecedent basis for the expression "the desired thickness" in claim 12; and insufficient antecedent basis for the expression "the electrodes" in claim

13. These rejections having been overcome by the amendments made herein to claims 10, 12 and 13, they should all be withdrawn.

More particularly, claim 10 has been amended to specify that the spiral wound seal comprises layers of compressed particles of exfoliated graphite, and that an adhesive is interposed between such layers. Thus, there now is clear antecedent basis for the expression "the layers" in claim 10.

With respect to claim 12, the objected-to term "desired" has been replaced by the term "predetermined." In fact, either term is accurate, as described at paragraphs [0050] and [0051] of the specification.

The rejection of claim 13 is not fully understood. In the art of graphite electrode joints, two electrodes are joined to form a joint, as is familiar to the skilled artisan and described throughout the above-captioned application. In the interest of expediting prosecution, however, claim 13 has been amended herein in order to specify that the claimed electrode joint comprises two electrodes. Thus, this rejection also has been overcome.

#### **Rejections Under 35 U.S.C. §102**

Claims 1-4, 6, 7 and 13-16 stand rejected under 35 U.S.C. §102(b) over Stroup (U.S. 2,836,806); claims 1, 2 and 13-14 stand rejected under 35 U.S.C. §102(b) over

Kaufmann et al. (U.S. 3,140,967); claims 1 and 13 stand rejected under 35 U.S.C. §102(b) over Gazda (U.S. 3,814,828); and claims 8-12 stand rejected under 35 U.S.C. §102(b) over Fitton (U.S. 5,645,284). Since none of these references disclose each limitation of the rejected claims, arranged as in those claims, anticipation is not present and the rejections under 35 U.S.C. §102 should be withdrawn.

In order to further distinguish the claims of the present invention from the cited art, claims 1 and 8 have been amended herein to specify that the inventive seal is interposed between the end faces of adjoining electrodes in an electrode joint. Support for these amendments appears in the specification at, *inter alia*, paragraph [0030].

The Stroup patent does not relate to oxidation protection. Rather, its purpose is to improve electrical conductivity at the base of the socket in standard pin joints where no current passes normally. No one skilled in the art would consider placing such material between the end-faces of a standard joint since the resistivity would then be increased rather than decreased, which would be counterproductive. The comment in the Office Action that "it is inherent that the pad or seal [of Stroup] has an oxidation rate at least equal to or less than the electrodes ..." is simply not true. Rather, the materials disclosed by Stroup oxidize faster than the solid graphite of electrodes.

Stroup pertains to a conductive pad at the base of socket areas (BOS) of an electrode joint to fill in the void area. Contrariwise, the inventive seal of the above-captioned application is placed in the middle of the joint, between the end faces of adjoining electrodes, for purposes of retarding oxidation. Stroup also claims lower joint resistance by filling in void with conductive material and having equal thread spacing due to the pad. The seal of the above-captioned application does not make contact with the thread and reason for compressibility is to ensure endfaces do not bind on the seal before the thread flanks come in full contact. These differences are significant and not obvious.

The Kaufmann et al. patent relates pertains to cementing a joint. As was the case with Stroup, the material resides in the BOS area and flows throughout the joint upon heating. Moreover, the material employed is different than that of the claimed invention, and could not function in the same manner even if placed differently. The intent in Kaufmann et al. is to lock the joint in place, internal to the joint system via a reservoir located at BOS. This is different in form and function from the seal of the above-captioned application.

In the Gazda patent, the intent is to provide a method to achieve a centered connecting pin through an injection of a hot carbon material to the BOS area to fill void and set the precet distance. Again, as with the other cited patents, Gazda is working in the areas at the BOS and not center of the joint.

The Fitton patent is equally inapposite. The application of the Fitton seal is in the fluid sealing business, for the purpose of preventing fluid / material from leaking out. The intention of the seal of the above-captioned application is to prevent oxidation from getting in, thus the orientation of the inventive spiral wound material is in the direction of the highest resistance to oxidation.

More particularly, the intent of Fitton is to minimize corrosion of a metal joint due to corrosion from within (*e.g.*, acid). The invention of the above-captioned application functions to minimize oxidation from the outside. Additionally, in Fitton,

- (a) metal is involved between the turns of the spiral tape. This would not be effective in the application of Applicants' invention because any metal would quickly melt on an arc furnace and, additionally, iron catalyses oxidation of graphite. Further metal is also incorporated in Fitton's improvement over standard;
- (b) the form of the compressible tape in Fitton is V-shaped to allow compression by narrowing the angle of the V. This shape also forces the seal onto the metal flanges when under fluid pressure; and
- (c) in such a flange joint the range of compression is large; it is determined by the tightening of the steel bolts around the flange. In the above-captioned application, the range of compression is relatively small; it is determined by the small amount of

tightening rotation upon applying torque to the joint. In addition, variations in joint machining need to be allowed for, which further restricts the amount of compression. Thus, the inventive seal is a compromise between requiring a high initial density for oxidation protection but still being compressible by the operator of an arc furnace on the application of torque to the joint.

Thus, none of the cited references anticipate the inventions of any of claims 1-19. Moreover, even if combined, none of the cited references even remotely suggests the inventions of any of these claims. Thus, all rejections of the claims should be withdrawn and the claims passed to allowance.

The remaining references cited but not applied have been reviewed and are not deemed sufficiently pertinent to require additional comment.

### CONCLUSION

Based on the foregoing amendments and remarks, it is believed that all pending claims 1-19 are in condition for allowance. Such action is earnestly sought. If there remains any matter which prevents the allowance of any of these claims, the Examiner is requested to call the undersigned "collect" at 615.242.2400 to arrange for an interview which may expedite prosecution.

The Commissioner is authorized to charge any deficiency or credit any overpayment associated with the filing of this Response to Deposit Account 21-0010.

Respectfully submitted,



James R. Cartiglia  
Registration No. 30,738  
WADDEY & PATTERSON  
A Professional Corporation  
Customer No. 23456

ATTORNEY FOR APPLICANT

James R. Cartiglia  
Waddey & Patterson  
414 Union Street, Suite 2020  
Bank of America Plaza  
Nashville, TN 37219  
(615) 242-2400